

Translation

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference K 58 073/7ch	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/001677	International filing date (day/month/year) 19 February 2003 (19.02.2003)	Priority date (day/month/year) 22 February 2002 (22.02.2002)
International Patent Classification (IPC) or national classification and IPC B42D 15/00		
Applicant GIESECKE & DEVRIENT GMBH		

I. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 7 sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

Date of submission of the demand 18 September 2003 (18.09.2003)	Date of completion of this report 16 July 2004 (16.07.2004)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

PCT/EP2003/001677

I. Basis of the report

1. With regard to the elements of the international application:*

 the international application as originally filed the description:

pages _____ 1-20 _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

 the claims:

pages _____, as originally filed

pages _____, as amended (together with any statement under Article 19)

pages _____, filed with the demand

pages _____ 1-33 _____, filed with the letter of 21 June 2004 (21.06.2004)

 the drawings:

pages _____ 1-3 _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

 the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

 the language of a translation furnished for the purposes of international search (under Rule 23.1(b)). the language of publication of the international application (under Rule 48.3(b)). the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

 contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4. The amendments have resulted in the cancellation of: the description, pages _____ the claims, Nos. _____ the drawings, sheets/fig _____5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 03/01677

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-33	YES
	Claims		NO
Inventive step (IS)	Claims	1-33	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-33	YES
	Claims		NO

2. Citations and explanations

1. Reference is made to the following documents:

D1: WO 01 53113 A (FLEX PRODUCTS INC) 26 July 2001

D2: US-A-5 298 922 (MERKLE HANSJURGEN ET AL)

29 March 1994

D3: DE 43 34 848 C (KURZ LEONHARD FA; DEUTSCHE
BUNDES BANK (DE)) 5 January 1995

2. The invention can be made or used (in the technical sense) in any industrial field and therefore can be considered to have industrial applicability (PCT Article 33(4)).

3. D1, which is considered the closest prior art, discloses a device which differs from the subject matter of **claims 1, 18 and 31** in that:

- (1) the interference element **has recesses in at least one layer**;
- (2) the security element **is semitransparent**;
- (3) the diffraction structures are **immediately adjacent the interference element**.

3.1 Therefore the subject matter of claims 1, 18 and 31 is novel (PCT Article 33(2)).

- 3.2 Since none of the citations describes features (1) to (3) in combination, the subject matter of claims **1, 18 and 31** involves an inventive step (PCT Article 33(3)).
- 3.3 Claims **2 to 17, 19 to 30, 32 and 33** are dependent on claims **1, 18 and 31**, respectively, and hence likewise meet the PCT novelty and inventive step requirements.

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Amended claims

1. A security document, in particular paper of value such as bank note, or semifinished product for producing the security document, comprising a substrate (1) with first and second opposing substrate surfaces and a multilayer security element (2, 4) that is so connected with the substrate (1) that it is visually recognizable at least from one of the two substrate surfaces, wherein the security element includes a multilayer interference element (I) producing a color shift effect and a layer (S) with diffraction structures (8) that at least partly overlaps the interference element (I), characterized in that the security element is semitransparent, the interference element (I) has gaps in at least one layer, and the diffraction structures (8) directly adjoin the interference element (I).
2. A security document or semifinished product according to claim 1, wherein the security element (2, 4) is applied to one of the two substrate surfaces and spans a hole (3) or a transparent area in the substrate (1).
3. A security document or semifinished product according to claim 1, wherein the security element (4) is at least partly embedded in the substrate (1) and spans a hole (3) or a transparent area in the substrate (1).
4. A security document or semifinished product according to claim 3, wherein the security element (4) is so embedded in the substrate (1) that it is visually recognizable in first areas (7) of the substrate (1) on the first substrate surface and optionally additionally in the second areas of the substrate different from the first areas on the second substrate surface.
5. A security document or semifinished product according to claim 3 or 4, wherein the security element (4) is a security thread.
6. A security document or semifinished product according to at least one of claims 1 to 5, wherein the interference element (I) is present on a transparent plastic substrate (S).

- A security document or semifinished product according to claim 6, wherein the plastic substrate (S) is colored.
8. A security document or semifinished product according to at least one of claims 1 to 7, wherein the interference element (I) includes a first absorber layer (A_1), a dielectric layer (D) adjoining and overlying the first absorber layer (A_1) and a second absorber layer (A_2) adjoining and overlying the dielectric layer (D).
9. A security document or semifinished product according to at least one of claims 1 to 7, wherein the interference element (I) includes at least three adjacent, mutually overlying dielectric layers (D_1 to D_4) having alternately a high and a low refractive index.
10. A security document or semifinished product according to at least one of claims 1 to 9, wherein the layers ($A_1, D, A_2; D_1$ to D_4) constituting the interference element (I) are vapor-deposited.
11. A security document or semifinished product according to at least one of claims 1 to 10, wherein the interference element (I) has gaps (9) in the form of signs, patterns or encodings, the gaps preferably being present only in one of the layers of the interference element, especially preferably in at least one of the absorber layers.
12. A security document or semifinished product according to at least one of claims 6 to 11, wherein the plastic substrate (S) has the diffraction structures (8).
13. A security document or semifinished product according to at least one of claims 1 to 11, wherein the diffraction structures (8) are present in a separate layer.
14. A security document or semifinished product according to at least one of claims 1 to 13, wherein the diffraction structures (8) include an embossed relief pattern.
15. A security document or semifinished product according to at least one of claims 1 to 14, wherein an effect caused by the diffraction structures is visually recog-

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recognizable from one or both sides of the security element depending on the way of viewing the security element.

16. A security document or semifinished product according to at least one of claims 1 to 15, wherein an effect caused by the diffraction structures and/or a color shift effect produced by the interference element is visually recognizable from both sides of the security element depending on the way of viewing the security element.
17. A security document or semifinished product according to claim 16, wherein the effect caused by the diffraction structures and/or the color shift effect produced by the interference element are of identical design from both sides of the security element depending on the way of viewing the security element.
18. A security element to be embedded in or applied to a security document (1), in particular for a paper of value such as a bank note, wherein the security element includes a multilayer interference element (I) producing a color shift effect and a layer (S) with diffraction structures (8) that at least partly overlaps the interference element (I), characterized in that the security element is semitransparent, the interference element (I) has gaps in at least one layer, and the diffraction structures (8) directly adjoin the interference element (I).
19. A security element according to claim 18, wherein the interference element (I) is present on a transparent plastic substrate (S).
20. A security element according to claim 18 or 19, wherein the interference element (I) includes a first absorber layer (A_1), a dielectric layer (D) adjoining and overlying the first absorber layer (A_1) and a second absorber layer (A_2) adjoining and overlying the dielectric layer (D).
21. A security element according to claim 18 or 19, wherein the interference layer (I) includes at least three adjacent, mutually overlying dielectric layers (D_1 to D_4) having alternately a high and a low refractive index.

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22. A security element according to at least one of claims 19 to 21, wherein the layers ($A_1, D, A_2; D_1$ to D_4) constituting the interference element (I) are vapor-deposited.
23. A security element according to at least one of claims 18 to 22, wherein the interference element (I) has gaps (9) in the form of signs, patterns or encodings, the gaps preferably being present only in one of the layers of the interference element, especially preferably in at least one of the absorber layers.
24. A security element according to at least one of claims 19 to 23, wherein the plastic substrate (S) has the diffraction structures (8).
25. A security element according to at least one of claims 18 to 23, wherein the diffraction structures (8) are present in a separate layer.
26. A security element according to at least one of claims 18 to 25, wherein the diffraction structures (8) include an embossed relief pattern.
27. A security element according to at least one of claims 18 to 26, wherein an effect caused by the diffraction structures and/or a color shift effect produced by the overlying interference element are visually recognizable from both sides of the security element depending on the way of viewing the security element.
28. A security element according to at least one of claims 18 to 27 in the form of a security thread to be embedded in a security document.
29. A security element according to at least one of claims 18 to 27 as a label or patch to be applied to a security document.
30. A security element according to at least one of claims 18 to 27 and 29 as a transfer element to be applied to a security document by the transfer method.
31. Transfer material for applying a security element to a document of value, wherein the transfer material includes the following layer structure:
 - a multilayer interference element (I) with a color shift effect, and

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a layer (3) with diffraction structures that at least partly overlaps the interference element, characterized in that the security element is semitransparent, the interference element (7) has gaps in at least one layer, and the diffraction structures (8) directly adjoin the interference element (7).

32. A method for producing a document of value having a security element, characterized in that the layer structure of the transfer material according to claim 31 is transferred to the document of value in certain areas.
33. Use of the security document or semifinished product according to at least one of claims 1 to 17 for protecting products.

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